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(54) PREPARATION OF RESIN COMPOSITION

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method for preparing resin compositions excellent in gas barrier properties and appearance.

SOLUTION: A resin composition comprising (A) a water swelling laminar inorganic compound and (B) an ethylene/vinyl acetate based copolymer saponified product can be obtained by successively carrying out the steps of (1) adding an alcohol or an alcohol and water and the ethylene/vinyl acetate based copolymer saponified product (B) to an aqueous dispersion of the water swelling laminar inorganic compound (A) containing a water soluble polymer to dissolve said copolymer saponified product (B); (2) depositing a resin composition comprising the water swelling laminar inorganic compound (A), the water soluble polymer and the ethylene/vinyl acetate based copolymer saponified product (B) in the solution into water; and (3) stirring the deposit in hot water to remove the water soluble polymer out of the resin composition and drying the resulting product.

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CLAIMS

[Claim(s)]

[Claim 1]A manufacturing method of a resin composition obtaining a resin composition which performs following process (1) - (3) one by one, and consists of a water swelling laminar inorganic compound (A) and an ethylene-vinyl acetate system copolymer saponification thing (B).

(1) Add alcohol or alcohol, water, and an ethylene-vinyl acetate system copolymer saponification thing (B) to a water dispersion of a water swelling laminar inorganic compound (A) containing a water soluble polymer, and dissolve this copolymer saponification thing (B) in it.

(2) Deposit underwater a resin composition which consists of a water swelling laminar inorganic compound (A) in this liquid, a water soluble polymer, and an ethylene-vinyl acetate system copolymer saponification thing (B).

(3) Agitate this sludge in hot water, remove a water soluble polymer from the inside of the above-mentioned resin composition, and dry.

[Claim 2]A manufacturing method of the resin composition according to claim 1, wherein a water swelling laminar inorganic compound (A) has not less than 30ml/2 g swelling power (a measurement standard: Japanese bentonite industrial meeting standard-testing-method constant volume method) to a partially aromatic solvent of water/alcohol =70 / 30 (weight ratio) in 20 **.

[Claim 3]A manufacturing method of the resin composition according to claim 1 or 2, wherein a water swelling laminar inorganic compound (A) is a smectite or a water swelling fluoride mica system mineral.

[Claim 4]claims 1-3, wherein ethylene contents of an ethylene-vinyl acetate system copolymer saponification thing (B) are 10 - 60-mol % and the degree of saponification is more than 80 mol % -- either -- a manufacturing method of a resin composition of a statement.

[Claim 5]claims 1-4 characterized by using at least one sort of polyvinyl alcohol system resin, a polyvinyl pyrrolidone, a polyethylene glycol, and polyethylene oxide as a water soluble polymer -- either -- a manufacturing method of a resin composition of a statement.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the manufacturing method of the resin composition excellent in the gas barrier property and appearance under high humidity in more detail about the manufacturing method of the resin composition which consists of a water swelling laminar inorganic compound (A) and an ethylene-vinyl acetate system copolymer saponification thing (B).

[0002]

[Description of the Prior Art]Generally, the ethylene-vinyl acetate system copolymer saponification thing (it outlines the following EVOH) is excellent in transparency, antistatic property, oil resistance, solvent resistance, gas barrier property, a smell retaining property, etc., and is thermoplastics in which melt molding is possible.

It is used for various wrapping uses, such as food packing.

However, gas barrier property and a mechanical physical property change with change of the environment of external humidity and temperature a lot, and such EVOH has the fault that gas barrier property falls, under the environment of high humidity. On the other hand, it is indicated by these days that the mixed material of EVOH and a water swelling inorganic compound is capturing the spotlight for the purpose of the improvement of gas barrier property, for example, mixes EVOH and water swelling phyllosilicate under existence of water at JP,5-39392,A.

[0003]

[Problem(s) to be Solved by the Invention]However, as a result of this invention person's etc. inquiring in detail, in the above-mentioned indication art. In order to supply water swelling phyllosilicate under existence of water and also to add the water/alcohol solution of EVOH, Even if it becomes clear that it is easy to generate what is called insoluble, therefore cannot distribute to homogeneity, and time most for carrying out uniform dispersion is needed and it is attached to gas barrier property, With the above-mentioned indication art, it is only the barrier nature evaluation of a layered product which laminated polypropylene in the inside-and-outside layer, and the further improvement of gas barrier property is desired with the advancement of the latest art instead of what is satisfied still more under high humidity by the monolayer. In such a background, it aims at providing the manufacturing method of the resin composition excellent in the gas barrier property and appearance under high humidity by this invention.

[0004]

[Means for Solving the Problem] Then, a result to which this invention persons repeated research wholeheartedly in light of the above-mentioned circumstances, It found out that a manufacturing method of a resin composition which obtains a resin composition which performs following process (1) - (3) one by one, and consists of a water swelling laminar inorganic compound (A) and an ethylene-vinyl acetate system copolymer saponification thing (B) agreed for the above-mentioned purpose, and this invention was completed.

(1) Add alcohol or alcohol, water, and an ethylene-vinyl acetate system copolymer saponification thing (B) to a water dispersion of a water swelling laminar inorganic compound (A) containing a water soluble polymer, and dissolve this copolymer saponification thing (B) in it.

(2) Deposit underwater a resin composition which consists of a water swelling laminar inorganic compound (A) in this liquid, a water soluble polymer, and an ethylene-vinyl acetate system copolymer saponification thing (B).

(3) Agitate this sludge in hot water, remove a water soluble polymer from the inside of the above-mentioned resin composition, and dry.

[0005]

[Embodiment of the Invention] Below, this invention is explained in detail. As a water swelling laminar inorganic compound (A) used for this invention, Without being restricted especially Argillite, such as a smectite and a vermiculite, Synthetic mica etc. are mentioned and montmorillonite, beidellite, nontronite, saponite, hectorite, a sauconite, a SUCHIBUN site, etc. are mentioned as an example of the former smectite. These may be natural things or could be compounded. Montmorillonite is preferred also the inside of these or a smectite, especially in it. Water swelling fluoride mica system minerals, such as Na-type fluoride 4 silicon mica, a Na-type TENIO light, Li type TENIO light, and Na-type hectorite, etc. are used preferably.

[0006] The swelling power of this water swelling laminar inorganic compound (A), In 20 **, it is desirable, and it becomes insufficient [2 g / gas barrier property] in less than 30ml /that not less than 40ml/2 g not less than 30ml/2 g is not less than 50ml/2 g still more preferably preferably to the partially aromatic solvent of water/alcohol =70 / 30 (weight ratio), and it is not preferred. The swelling power of a water swelling laminar inorganic compound (A) is a Japanese bentonite industrial meeting. It is measured by a standard-testing-method constant volume method.

[0007] Especially as EVOH (B) used for this invention, although not limited, ethylene contents are 10 - 60-mol %, and it is preferred that the degree of saponification is more than 80 mol %. An ethylene content is 20-50-mol % preferably, and the degree of saponification is more than 90 mol %. If the gas barrier property at the time of highly humid and melt molding nature fall less than [10 mol %] and an ethylene content exceeds 60-mol %, sufficient gas barrier property is no longer acquired, and it is not desirable. Gas barrier property, thermal stability, and moisture resistance fall, and the degree of saponification is not preferred less than [80 mol %].

[0008] As for the melt index (MI) of this EVOH (B), it is preferred that they are 0.5-100g/10 minutes (210 **), and also it is preferred that they are 1-50g/10 minutes (210 **). The inside of an extrusion machine will be in a high torque state at the time of shaping, and, in extrusion, this melt index (MI) becomes difficult, in being smaller than this range, and when larger than this range, the mechanical strength of a molded product is insufficient and it is not desirable.

[0009]This EVOH (B) is obtained by saponification of an ethylene-vinyl acetate system copolymer, and this ethylene-vinyl acetate system copolymer, It is manufactured by the publicly known arbitrary polymerizing methods, for example, suspension polymerization, emulsion polymerization, solution polymerization, etc., and saponification of an ethylene-vinyl acetate system copolymer can also be performed by a publicly known method.

[0010]If this EVOH (B) is little in the range which does not spoil the characteristics, such as transparency, gas barrier property, and solvent resistance, Alpha olefins, such as propylene, isobutene, alpha-octene, alpha-dodecen, and alpha-octadecene, Unsaturated carboxylic acid or its salt, partial alkyl ester, perfect alkyl ester, It does not interfere, even if comonomers, such as an unsaturation sulfonic acid system compound, acrylonitrile (meta), acrylamide (meta), vinyl ether, a vinyl silane compound, VCM/PVC, and styrene, are included as a copolymer component. In the range which does not spoil the meaning of this invention, even if urethane-izing, acetalization, cyanoethylation, etc. back-denaturalize, it does not interfere.

[0011]In this invention, in the resin composition which consists of the above-mentioned water swelling laminar inorganic compound (A) and EVOH (B), to be manufactured by following-steps (1) - (3) is required, and this process is explained in full detail hereafter.

[0012][Process (1)] Alcohol or alcohol, water, and EVOH (B) are added to the water dispersion of the water swelling laminar inorganic compound (A) containing a water soluble polymer, and this EVOH (B) is dissolved in it. A water swelling laminar inorganic compound (A) makes a water soluble polymer add and contain, agitating [distribute water so that it may become 1 to 10 % of the weight, and] under 60-80 ** conditions. subsequently, these dispersion liquid -- water/alcohol -- 20 / 80 - 80/20 (weight ratio) -- alcohol is added (water is also added further if needed), and also EVOH (B) is added, and it agitates and mixes under 60-90 ** flowing-back conditions so that it may be preferably set to 40 / 60 - 60/40 (weight ratio). About addition of alcohol (necessity is accepted and it is water) and EVOH, it may add independently, respectively or may add simultaneously as the alcohol solution of EVOH, or a mixed solution of the alcohol/water of EVOH. It is desirable especially preferred that it is 10 to 40 % of the weight, and the concentration of EVOH at this time is 20 to 30 % of the weight.

[0013]as the above-mentioned water soluble polymer, polyvinyl alcohol system resin, a polyvinyl pyrrolidone, a polyethylene glycol, polyethylene oxide, etc. are mentioned -- these -- independent, it uses together and is used. a molecular weight especially -- 1000-1 million -- the thing of 5000-50000 is preferably preferred. Here, polyvinyl alcohol system resin also contains the polyvinyl alcohol which denaturalized by ethyleneoxide. As alcohol, isopropyl alcohol, n-propyl alcohol, methanol, ethanol, etc. are used.

[0014]About the loadings of a water swelling laminar inorganic compound (A), EVOH (B), and a water soluble polymer. A water swelling laminar inorganic compound (A) is 3 - 5 weight section still more preferably two to 8 weight section preferably one to 10 weight section to EVOH(B)100 weight section, and it is preferred that a water soluble polymer is 3 - 5 weight section still more preferably two to 8 weight section preferably one to 10 weight section.

[0015]In these loadings, if the improvement effect of gas barrier property is not seen in less than one weight section but a water swelling laminar inorganic compound (A) exceeds ten weight sections, film appearance will get worse and it is not desirable. The effect of a dispersibility improvement of a water

soluble polymer in less than one weight section is not acquired, Film appearance gets worse, and the improvement effect of gas barrier property is low, if ten weight sections are exceeded, a water soluble polymer cannot be removed in removal of the water soluble polymer in a process (3), the fall of gas barrier property and the fall of processability are caused, and it is not desirable.

[0016][Process (2)] The water swelling laminar inorganic compound (A) in the liquid obtained at the above-mentioned process (1), a water soluble polymer, and the resin composition that consists of EVOH(s) (B) are deposited underwater. This liquid is emitted into 5-25 ** chilled water, or the container containing this resin composition solution is cooled with ice water, and the resin composition which the water swelling laminar inorganic compound (A) and the water soluble polymer contained in EVOH (B) is deposited.

[0017][Process (3)] The sludge obtained at the above-mentioned process (2) is agitated in hot water, a water soluble polymer is removed from the inside of the above-mentioned resin composition, and it dries. This sludge is put in 60-95 ** hot water, after agitating and making a water soluble polymer eluted from the inside of the above-mentioned resin composition, drying and desiccation are performed and the resin composition which consists of a water swelling laminar inorganic compound (A) and EVOH (B) is obtained. It is not limited in particular for this desiccation, but is performed by air-drying, hot air drying, infrared ray drying, vacuum drying, etc. In this invention, although it is preferred to remove a water soluble polymer thoroughly, if un-removing [the amount of] is about 1000 ppm or less preferably, it has about 5000 ppm or less of effects of this invention to the whole resin composition.

[0018]within the limits from which the purpose of this invention is not prevented in this invention -- other thermoplastics (polyolefine.) It is also possible to blend suitably plasticizers, such as polyamide, polyester, polystyrene, and EVOH, a heat stabilizing agent, an ultraviolet ray absorbent, an antioxidant, colorant, a bulking agent, a drier, a spray for preventing static electricity, etc. Metal salt of a hydrotalcite system compound, a hindered phenol system or a hindered amine system thermostabilizer, and high-class aliphatic carboxylic acid can also be added as an antigelling agent.

[0019]The resin composition obtained in this way is used abundantly at the use of a molded product, and is fabricated by a pellet, a film, a sheet, a container, textiles, a stick, a pipe, various mold goods, etc. by melt molding etc., and melt molding can also be again presented with it using these grinding articles (when carrying out the reuse of the recovery article etc.) and pellets. As melt molding, extrusion methods (T-die extrusion, inflation extrusion, blow molding, melt spinning, variant extrusion, etc.) and injection molding process are mainly adopted. Melt molding temperature is chosen from the range of 150-250 ** in many cases.

[0020]Although the resin composition obtained with the manufacturing method of this invention can be used for the molded product like ****, it is preferred to use at least for one side of the layer which especially consists of this resin composition as a layered product which laminates a thermoplastic resin layer, and a layered product suitable for practical use is obtained.

[0021]In manufacturing this layered product, other substrates are laminated to one side or both sides of a layer of this invention, but as a laminating method, the following methods are mentioned, for example. [of a resin composition] However, it is not limited to these.

[0022]The water-alcoholic (or solvent) content solution of a solution coating method this resin composition ** Mai Ya Bar, A thermoplastic resin film is coated by publicly known methods, such as the roller coating methods, such as photogravure and a reverse roll method, a spray coating method, and the dip-coating

method, and a layered product is produced. Then, desiccation is performed by a publicly known method. If an example is given, drying temperature should just heat 40-180 °C for 5 seconds - about 5 minutes at about 60-140 °C preferably. What is necessary is just to carry out until volatile matter content will usually be 2 or less % of the weight although the volatile matter content (water, alcohol, or solvent) in a coat is removed in this desiccation. In order to raise the resin composition layer of this invention, and the adhesive strength of a thermoplastic resin film, the coat of the usual anchor coat agents (a polyurethane system, a polyester system, etc.) may be beforehand carried out on a film.

[0023]** Carry out melting extrusion of the thermoplastics to the film of the resin composition of an extrusion coating Homoto invention, and a sheet, and produce a layered product. Melting extrusion of the resin composition of this invention is conversely carried out to substrates, such as thermoplastics, and a layered product is produced.

[0024]** Co-extrude the resin composition of a co-extrusion Homoto invention, and other thermoplastic thing resin, and produce a layered product. As other party resin in co-extrusion, straight-chain-shape low density polyethylene, low density polyethylene, Medium density polyethylene, high density polyethylene, an ethylene-vinylacetate copolymer, An ionomer, ethylene propylene rubber, an ethylene-acrylic ester copolymer, Polypropylene, a propylene-alpha olefin (alpha olefin of carbon numbers 4-20) copolymer, Polyolefin system resin of broad sense, such as independent or an independent or thing of copolymers or these olefins of olefins, such as polybutene and a polypentene, which carried out graft denaturation of the copolymer with unsaturated carboxylic acid or its ester, Polyester, polyamide, copolymerization polyamide, polyvinyl chloride, a polyvinylidene chloride, Acrylic resin, polystyrene system resin, vinylester resin, a polyester elastomer, a polyurethane elastomer, chlorinated polyethylene, chlorinated polypropylene, EVOH, etc. are mentioned. Also in the above, polypropylene, polyamide, polyethylene, an ethylene-vinyl acetate system copolymer, polystyrene, polyethylene terephthalate, etc. are preferably used from a point of the ease of co-extrusion film production, and the practicality of film properties (especially intensity).

[0025]In co-extrusion, thermoplastics may be blended to the resin composition of this invention, and the resin composition of this invention may be blended to thermoplastics, or the resin which raises the adhesion of both stratification planes may be blended with at least the resin composition of this invention, or one side of thermoplastics.

[0026]** Laminate the film of the resin composition of a dry laminate Homoto invention, a sheet, and the film of other substrates and a sheet using publicly known adhesives, such as an organic titanium compound, an isocyanate compound, a polyester system compound, and a polyurethane compound, and produce a layered product. The ** co-extruding method is advantageous in respect of processability also in the above.

[0027]Molded products, such as a film and a sheet, are once obtained from the resin composition of this invention, When the extrusion coat of other substrates is carried out to this or the film of other substrates, a sheet, etc. are laminated using adhesives, It is usable in substrates (paper, a metallic foil, uniaxial stretching, a biaxially oriented plastic film or a sheet, textile fabrics, a nonwoven fabric, *****, a woody side, etc.) arbitrary in addition to the aforementioned thermoplastics.

[0028]When setting a (a1, a2, ...) and other substrates, for example, a thermoplastic resin layer, to b (b1, b2, ...) for the layer of the resin composition of this invention as lamination of a layered product, If it has a film, a sheet, and the shape of a bottle, only not only in the two-layer structure of a/b, b/a/b, a/b/a, a1/a2/b,

a/b1/b2, b2/b1-/a/b1 / b2 grade, and arbitrary combination are possible, and arbitrary combination, such as a bimetal type, a core (a)-sheath (b) type, a core (b)-sheath (a) type, or an eccentric sheath-core type, is possible for a and b in filament shape.

[0029]Although the above-mentioned resin composition or a layered product is used for the thing of various shape as it is, it is preferred to perform stretching treatment for a physical-properties improvement, and about this extension, it may be any of uniaxial stretching and biaxial stretching and is [having extended high magnification way-wise / physical properties / as much as possible] good.

[0030]What has draw magnification high as an extension method, such as deep drawing shaping and vacuum forming besides being the roll extending method, the tenter extending method, the tubular extending method, the extension blowing method, etc., is employable. In the case of biaxial stretching, any method of a simultaneous biaxial-stretching method and a serial biaxial-stretching method is employable. 80-170 ** of extension temperature is preferably chosen from the range of about 100-160 **.

[0031]After extension is completed in this way, subsequently heat setting is performed. Heat setting performs 80-170 ** of for [2 to 600 seconds] grade heat treatments at 100-160 ** preferably, it being feasible by a well-known means, and maintaining turgescence for the above-mentioned oriented film. The obtained oriented film can perform a cooling process, a rolling process, a printing job, dry laminate processing, a solution or melting coat processing, bag manufacture processing, deep drawing, box processing, tube processing, split processing, etc. if needed.

[0032]The shape of mold goods, such as a layered product obtained in this way, may be arbitrary, and a film, a sheet, a bottle, a pipe, a filament, a variant section extrusion thing, etc. are illustrated. A film, a sheet, or a container obtained is useful like the above as various kinds of wrapping, such as common foodstuffs, a pouch-packed food, drugs, heavy chemicals, and agricultural chemicals.

[0033]By this invention, since the resin composition which consists of a water swelling laminar inorganic compound (A) and EVOH (B) is manufactured by process (1) - (3) like the above using a water soluble polymer, the obtained resin composition shows the effect excellent in the gas barrier property and appearance under high humidity.

[0034]

[Example]An example is given to below and this invention is concretely explained to it. Especially, it means a weight reference that it is with the inside of an example "part" and "%", as long as there is no notice.

[0035]100 copies of example 1 water and natural montmorillonite 3 copy [swelling power carried out agitation mixing of 67 ml/2g] at 80 ** to the mixed solvent of water/isopropyl alcohol =70 / 30 (weight ratio), prepared dispersion liquid, there, added three copies there and agitated the polyvinyl pyrrolidone (molecular weight 10000). So that it may be set to water/methyl alcohol =50 / 50 (weight ratio), After adding methyl alcohol and water, 58 copies of EVOH(s) (degree % and melt index of ethylene content % and saponification of 29 mol 8g / 10 minutes (210 **, 2160g of load)) were added, and it agitated and dissolved at 80 ** so that it might become a solution 22%. [of 99.8 mol] The number of the content of natural montmorillonite to 100 copies of EVOH(s) at this time was five, and that of polyvinyl pyrrolidones was five.

[0036]Next, after emitting the solution to apply into 5 ** chilled water and depositing the resin composition in this solution, this sludge is ground to 5 mm x about five mm squares, churning is performed in 80 ** hot water for 1 hour, and a polyvinyl pyrrolidone is removed from a resin composition.

Then, drying and desiccation were performed and the resin composition of this invention was obtained.

The obtained resin composition was supplied to the single screw extruder, in T-pressure die casting, the film was produced under conditions with an extrusion machine preset temperature of 210 **, and the 30-micrometer-thick film was produced. The following evaluation was performed about the obtained film.

[0037](Oxygen transmittance) The obtained film was measured under the conditions of 20 ** and 80%RH with the equal pressure method (the MOCON method) using OXTRAN2/20 made from MOCON.

[0038](Appearance) In the obtained film, the diameter in 10 cm x 10 cm measured the number of foreign matters of 0.1 mm or more, and the following standard estimated.

O ... One or less piece O ... 2 - 5 piece x ... Six or more pieces [0039]100 copies of example 2 water and natural montmorillonite 9 copy [swelling power carried out agitation mixing of 67 ml/2g] at 80 ** to the mixed solvent of water/isopropyl alcohol =70 / 30 (weight ratio), prepared dispersion liquid, there, added three copies there and agitated the polyethylene glycol (molecular weight 20000). So that it may be set to water/methyl alcohol =50 / 50 (weight ratio), After adding methyl alcohol and water, 60 copies of EVOH(s) (degree % and melt index of ethylene content % and saponification of 32 mol 3g / 10 minutes (210 **, 2160g of load)) were added, and it agitated and dissolved at 80 ** so that it might become a solution 28%. [of 99.8 mol] The number of the content of natural montmorillonite to 100 copies of EVOH(s) at this time was 15, and that of polyethylene glycols was five. The following was performed like Example 1, it obtained the resin composition, obtained the 30-micrometer-thick film more nearly similarly than this resin composition, and performed the same evaluation as Example 1.

[0040]100 copies of example 3 water and natural montmorillonite 3 copy [swelling power carry out agitation mixing of 67 ml/2g] at 80 ** to the mixed solvent of water/isopropyl alcohol =70 / 30 (weight ratio), and dispersion liquid are prepared, There, 15 copies of polyvinyl alcohol (the degree %, the molecular weight 20000 of 90 mol of saponification) of concentration was added 20% there, and it agitated. So that it may be set to water/methyl alcohol =40 / 60 (weight ratio), After adding methyl alcohol and water, 60 copies of EVOH(s) (degree % and melt index of ethylene content % and saponification of 32 mol 3g / 10 minutes (210 **, 2160g of load)) were added, and it agitated and dissolved at 80 ** so that it might become a solution 22%. [of 99.8 mol] The number of the content of natural montmorillonite to 100 copies of EVOH (s) at this time was five, and that of polyvinyl alcohol was five. The following was performed like Example 1, it obtained the resin composition, obtained the 30-micrometer-thick film more nearly similarly than this resin composition, and performed the same evaluation as Example 1.

[0041]In example 4 Example 1, except having changed the polyvinyl pyrrolidone into three copies of ethyleneoxide denaturation polyvinyl alcohol (the repetition number 6 of the amount % and ethyleneoxide of 5 mol of denaturation, the degree %, the molecular weight 25000 of 50 mol of saponification), it carried out similarly and the same evaluation as Example 1 was performed.

[0042]in example 5 Example 1 -- as a water swelling laminar inorganic compound -- Na-type fluoride 4 silicon mica [-- except having used three copies of 96 ml/2g] to the mixed solvent of water/isopropyl alcohol =70 / 30 (weight ratio), swelling power was performed similarly and performed the same evaluation as Example 1.

[0043]In comparative example 1 Example 1, water, alcohol, and EVOH were added to the water dispersion of natural montmorillonite, and it dissolved in it, without adding a polyvinyl pyrrolidone, and dried by having emitted this solution underwater and having obtained the resin composition, and the same evaluation as Example 1 was performed.

[0044]In comparative example 2 Example 1, after depositing a resin composition in chilled water, the removal process of the polyvinyl pyrrolidone was skipped, except having performed drying and desiccation, it carried out similarly and the same evaluation as Example 1 was performed. Three copies of natural montmorillonites and three copies of polyvinyl pyrrolidones contain the obtained resin composition pellet to 100 copies of EVOH(s). The result of an example and a comparative example is shown in Table 1.

[0045]comparative example 3EVOH (degree % of 99.8 mol of ethylene content % and saponification of 32 mol.) It dried by having emitted the solution of water/methyl alcohol =50/50 (weight ratio) of melt-index 3g / 10 minutes (210 **, 2160g of load) underwater, and having obtained the resin composition, and the same evaluation as Example 1 was performed.

[0046]

[Table 1]

	酸素透過度 (cc・30 μ m/m ² ・day・atm)	外觀
実施例 1	0. 3	◎
＃ 2	0. 4	○
＃ 3	0. 4	○
＃ 4	0. 3	○
＃ 5	0. 4	◎
比較例 1	0. 8	×
＃ 2	4. 5	◎
＃ 3	1. 2	◎

[0047]

[Effect of the Invention]Since the method of process (1) - (3) like the above is used for the manufacturing method of this invention using a water soluble polymer in obtaining the resin composition which consists of a water swelling laminar inorganic compound (A) and EVOH (B), The resin composition excellent in the gas barrier property and appearance under high humidity is obtained.

A film, a sheet, or a container is presented with these resin compositions, and they are useful as various kinds of wrapping, such as common foodstuffs, a pouch-packed food, drugs, heavy chemicals, and agricultural chemicals.

[Translation done.]